Figure 1

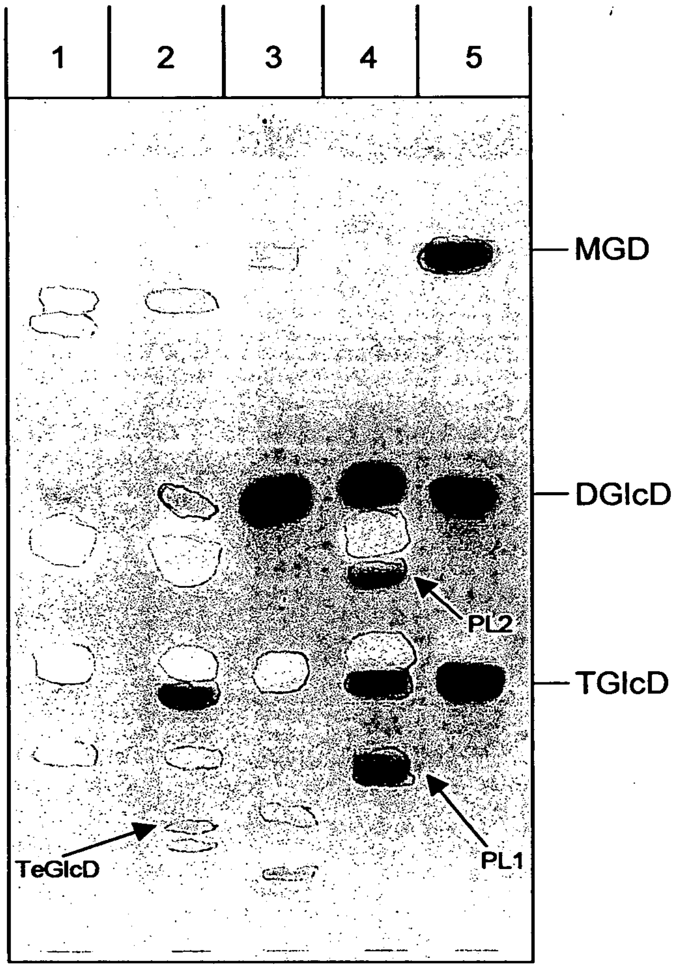


Figure 2

PL1

PL2

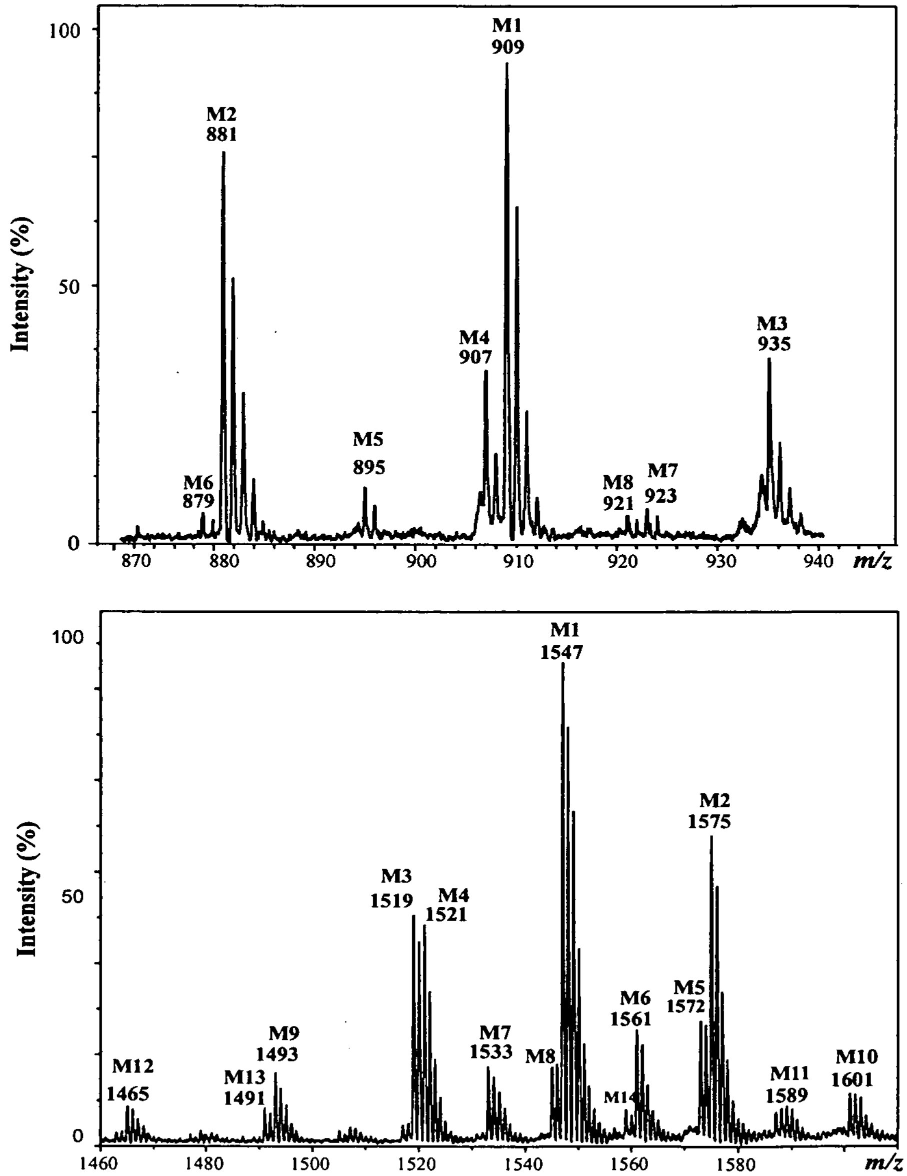


Figure 3

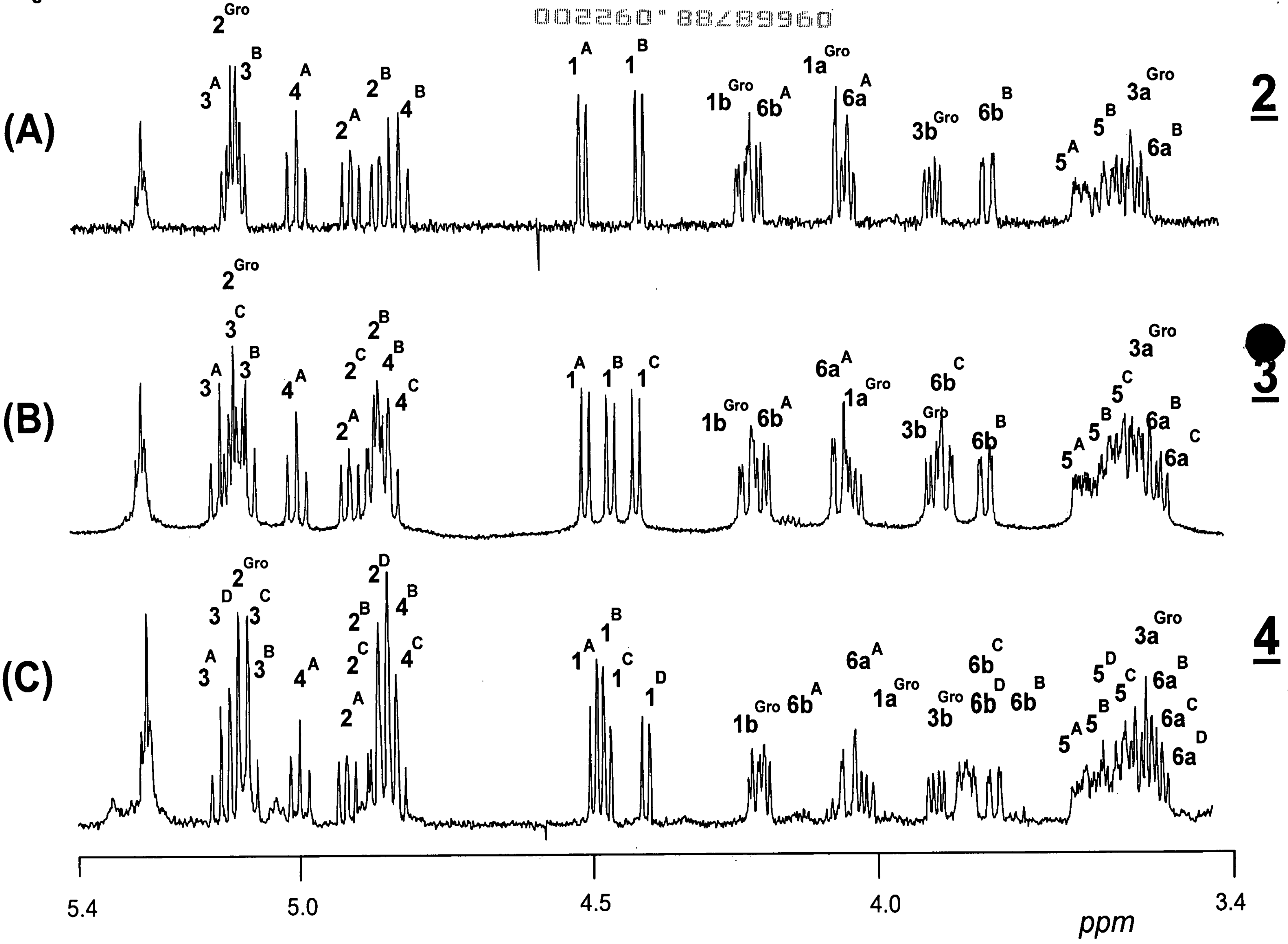

(A)
(B)
(C)
2
3
4
2^{Gro}
3^A
3^B
3^C
3^D
4^A
4^B
4^C
2^A
2^B
2^C
2^D
1^A
1^B
1^C
1^D
$1b^{Gro}$
$6b^A$
$1a^{Gro}$
$6a^A$
$3b^{Gro}$
$6b^B$
$6b^C$
$6b^D$
5^A
5^B
5^C
5^D
$3a^{Gro}$
$6a^B$
$6a^C$
$6a^D$
5.4
5.0
4.5
4.0
3.4
ppm

Figure 4

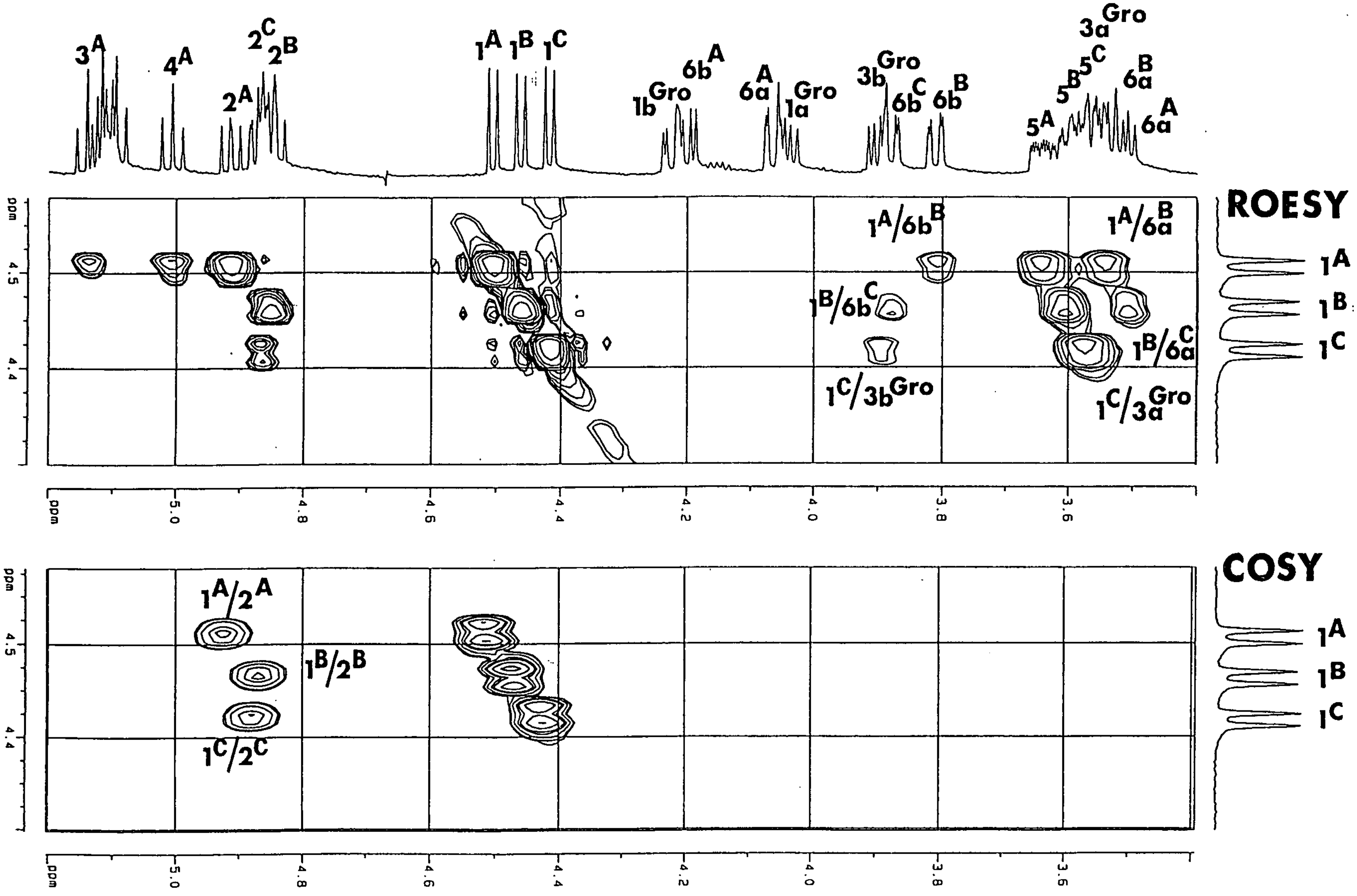

3^A
4^A
2^A
2^C
2^B
1^A
1^B
1^C
$1b^{Gro}$
$6b^A$
$6a^A$
$1a^{Gro}$
$3b^{Gro}$
$6b^C$
$6b^B$
5^A
5^B
5^C
$3a^{Gro}$
$6a^B$
$6a^A$
ROESY
$1^A/6b^B$
$1^A/6a^B$
$1^B/6b^C$
$1^B/6a^C$
$1^C/3b^{Gro}$
$1^C/3a^{Gro}$
1^A
1^B
1^C
ppm
4.5
4.4
ppm
5.0
4.8
4.6
4.4
4.2
4.0
3.8
3.6
COSY
$1^A/2^A$
$1^B/2^B$
$1^C/2^C$
1^A
1^B
1^C
ppm
4.5
4.4
ppm
5.0
4.8
4.6
4.4
4.2
4.0
3.8
3.6

Figure 5

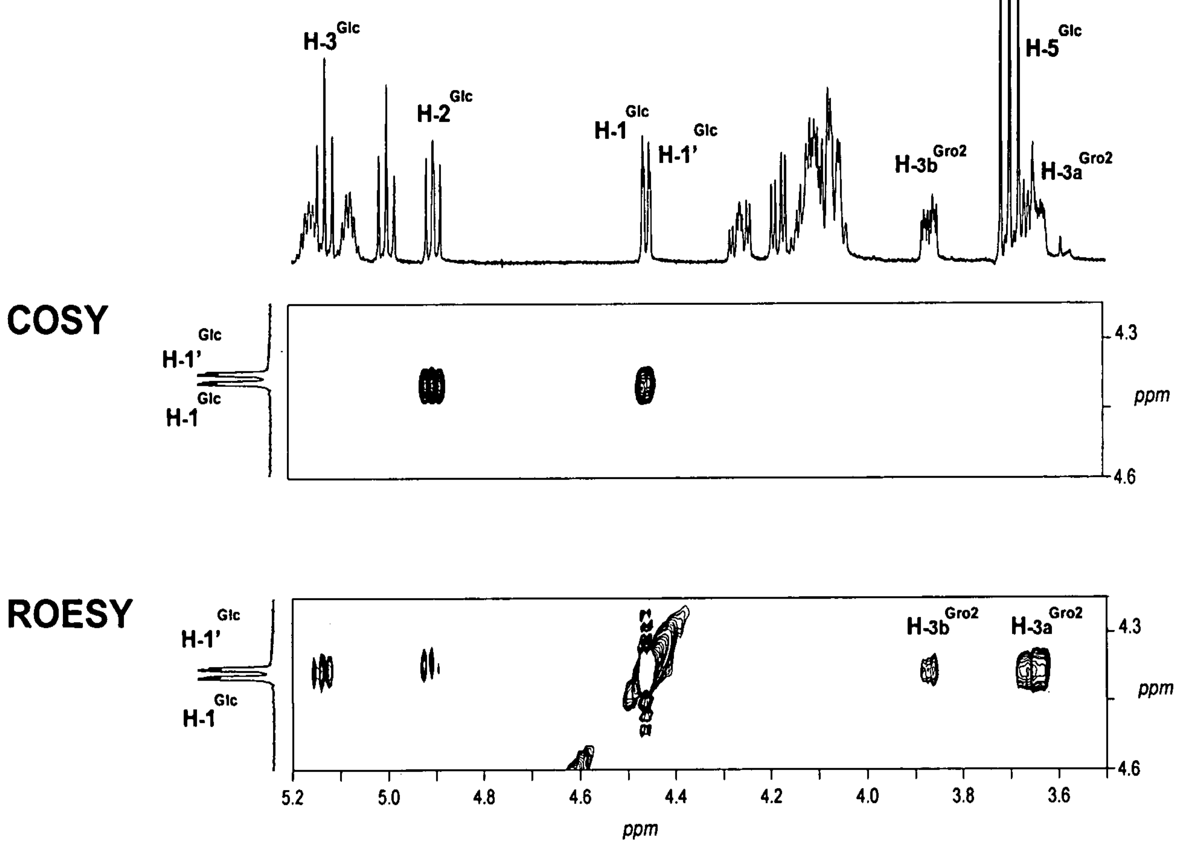

H-3^Glc
H-2^Glc
H-1^Glc
H-1'^Glc
H-3b^Gro2
H-5^Glc
H-3a^Gro2
COSY
H-1'^Glc
H-1^Glc
4.3
ppm
4.6
ROESY
H-1'^Glc
H-1^Glc
H-3b^Gro2
H-3a^Gro2
4.3
ppm
4.6
5.2
5.0
4.8
4.6
4.4
4.2
4.0
3.8
3.6
ppm

Figure 6

002260"88789960

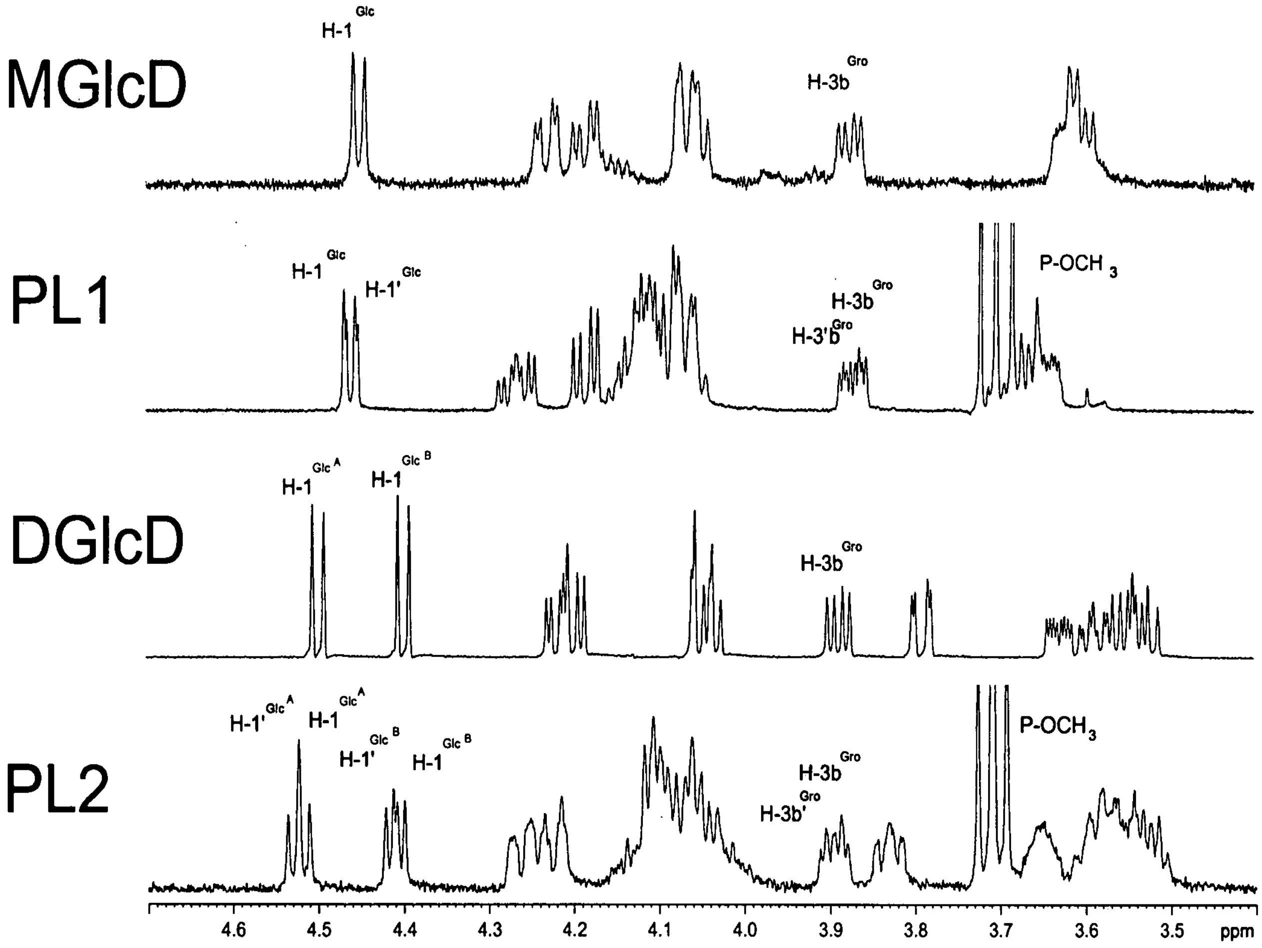


Figure 7

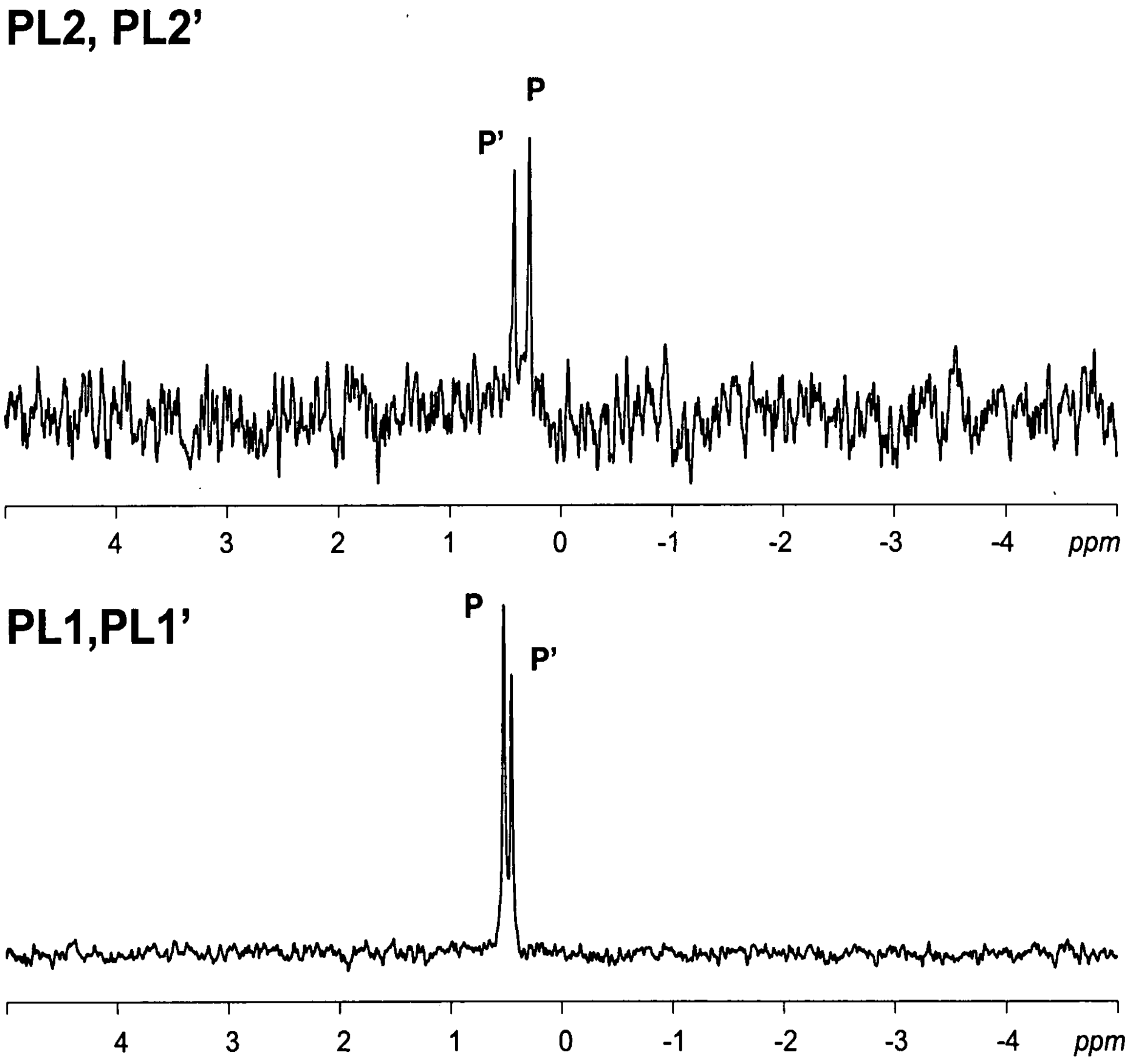
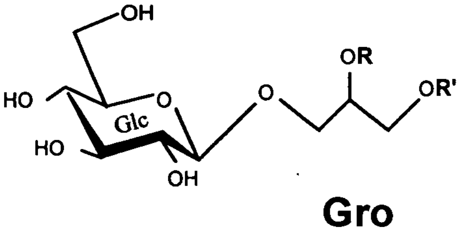
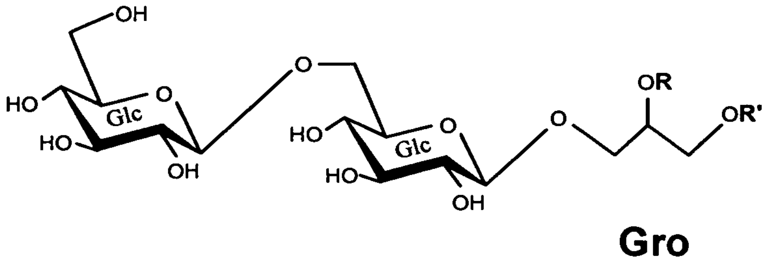


Figure 8



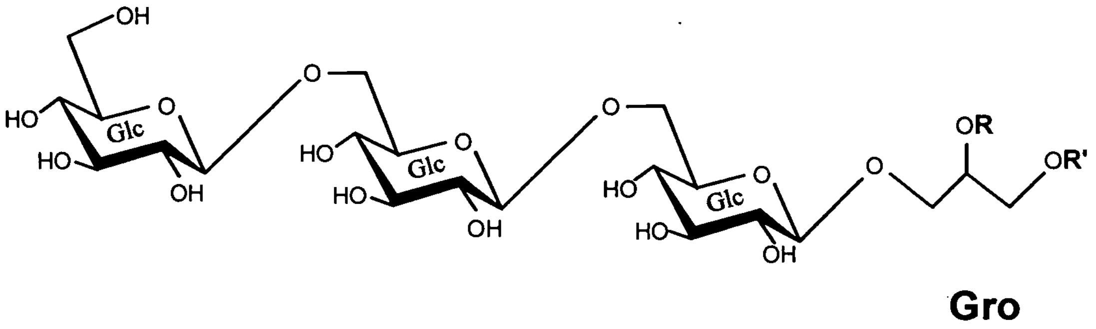
MGlcD

1



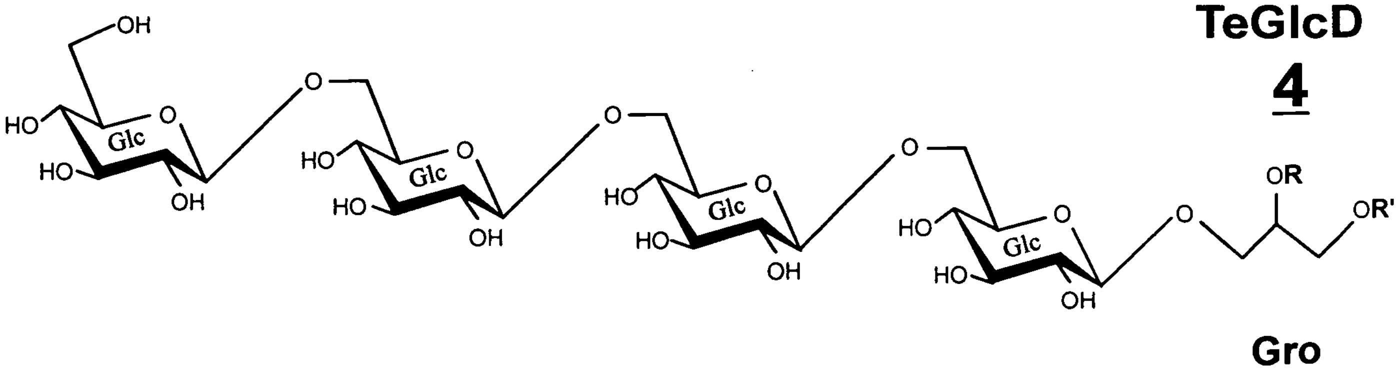
DGlcD

2



TGlcD

3



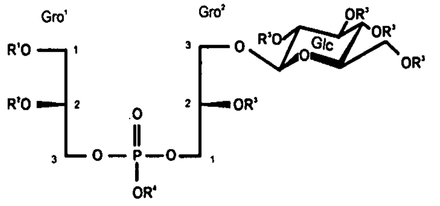
TeGlcD

4

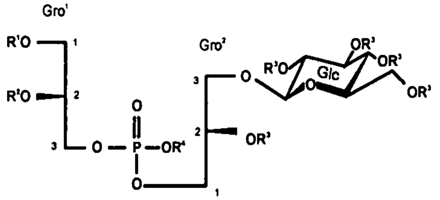
R = R' = 16:0, 16:1, 18:0, 18:1

Figure 9

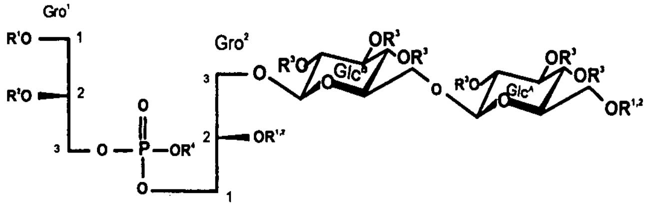
PL1



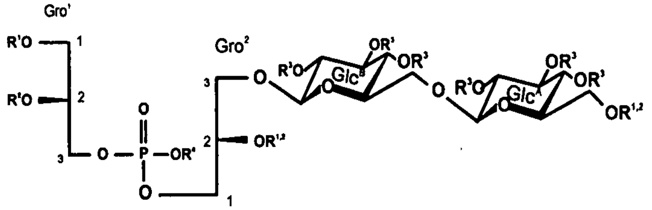
PL1'



PL2



PL2'



PL1 $R^1,R^2 =$ 16:0, 16:1, 18:1

PL1$_{Ac,Me}$ $R^1,R^2 =$ 16:0, 16:1, 18:1

PL2 $R^1,R^2 =$ 16:0, 16:1, 18:1

PL2$_{Ac,Me}$ $R^1,R^2 =$ 16:0, 16:1, 18:1

Figure 10

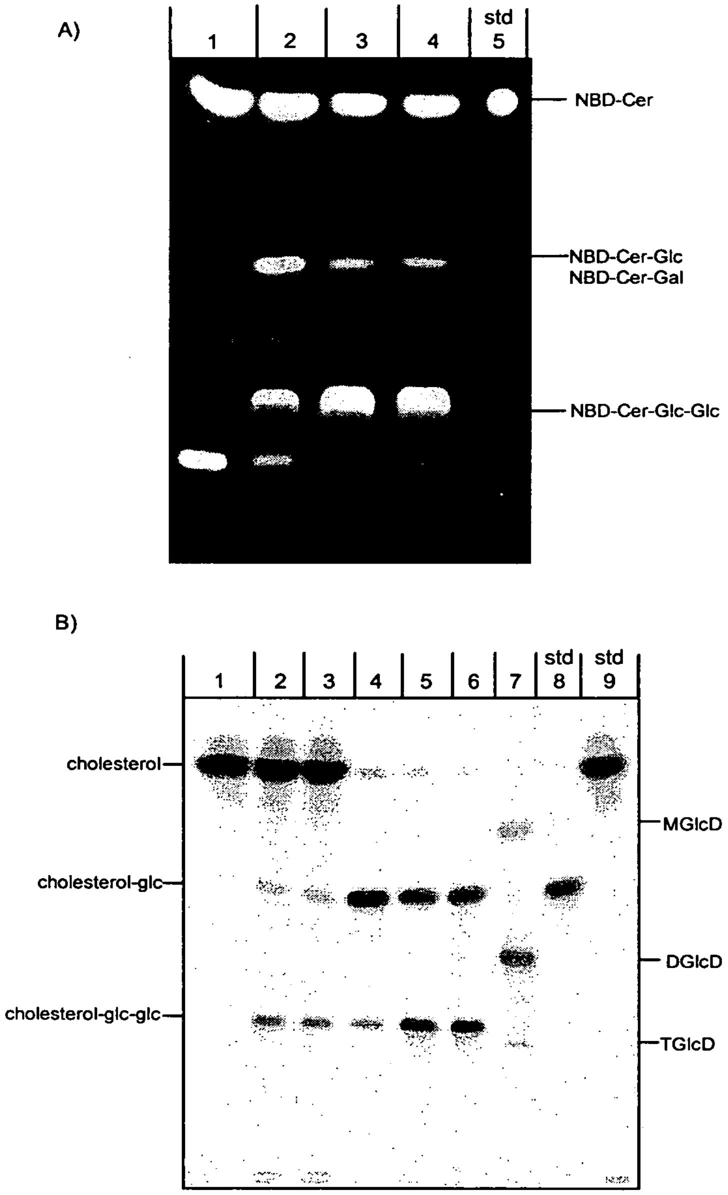
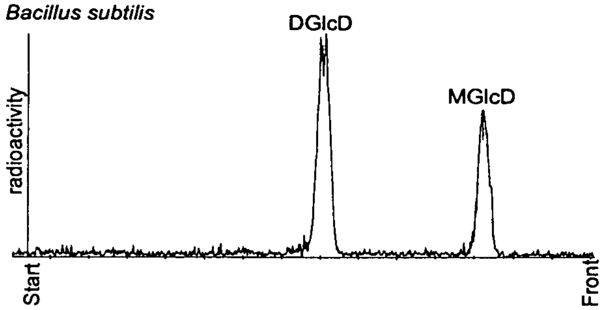

A)
1
2
3
4
std
5
NBD-Cer
NBD-Cer-Glc
NBD-Cer-Gal
NBD-Cer-Glc-Glc
B)
1
2
3
4
5
6
7
std
8
std
9
cholesterol
cholesterol-glc
cholesterol-glc-glc
MGlcD
DGlcD
TGlcD

Figure 11

organism **radioactive product**

a) Bacillus subtilis



b) E. coli BL21(DE3) expressing the processive glycosyltransferase *from B. subtilis*

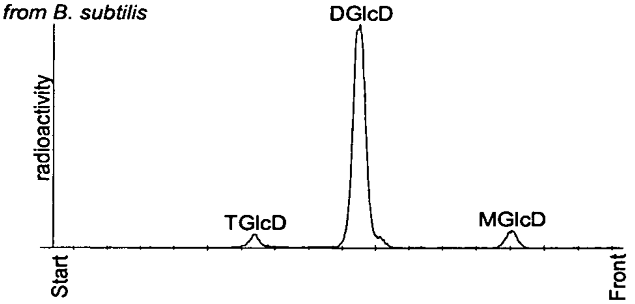
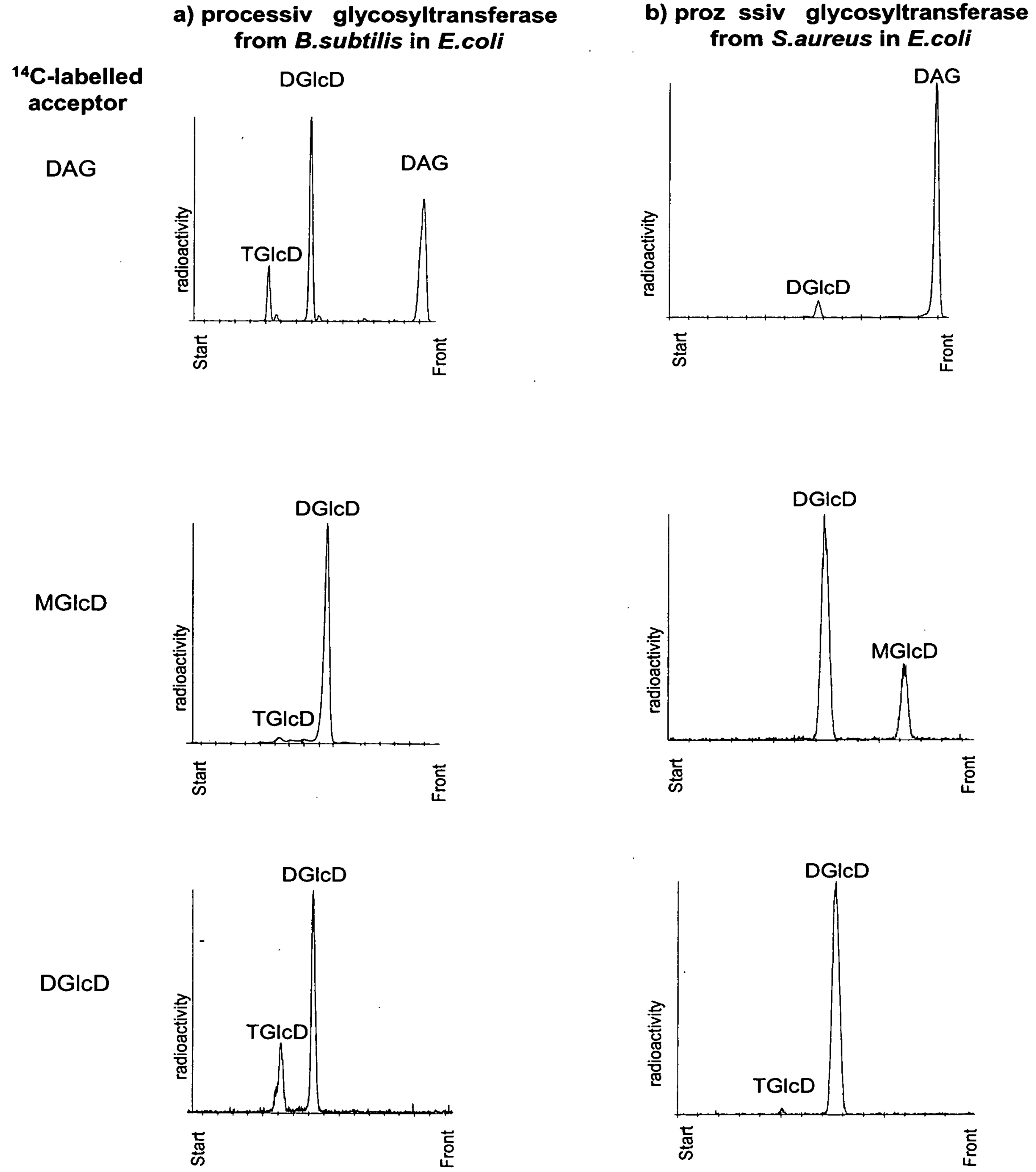


Figure 12



a) processiv glycosyltransferase from *B.subtilis* in *E.coli*
b) proz ssiv glycosyltransferase from *S.aureus* in *E.coli*
^{14}C-labelled acceptor
DAG
MGlcD
DGlcD
DGlcD
DAG
TGlcD
radioactivity
Start
Front
DAG
DGlcD
radioactivity
Start
Front
DGlcD
TGlcD
radioactivity
Start
Front
DGlcD
MGlcD
radioactivity
Start
Front
DGlcD
TGlcD
radioactivity
Start
Front
DGlcD
TGlcD
radioactivity
Start
Front

PL1

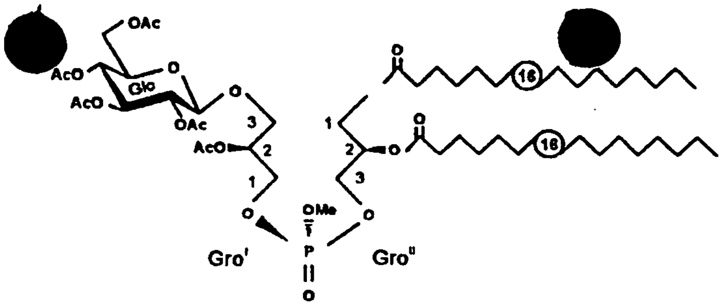
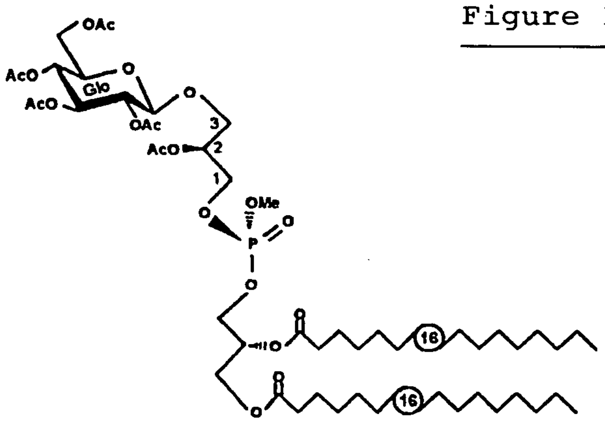
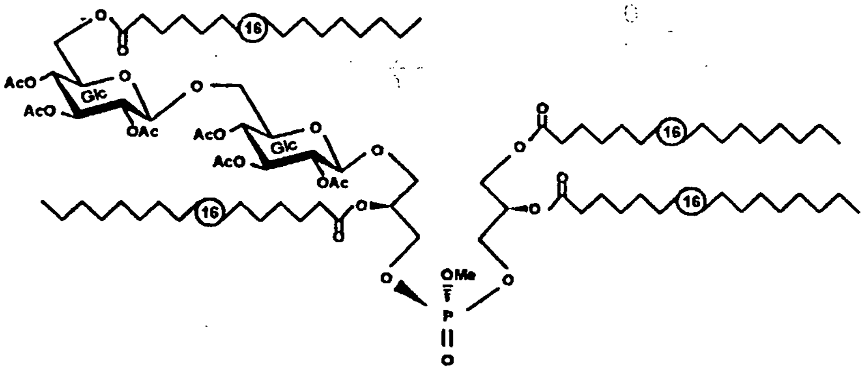


Figure 13

PL1'



PL2



PL2'